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# THE CAUSAL RELATIONSHIPS AMONG CORRUPTION, POLITICAL INSTABILITY, ECONOMIC DEVELOPMENT AND FOREIGN AID: EVIDENCE FROM THE ECONOMIC COMMUNITY OF WEST AFRICAN STATES

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**Abstract**:

*Although the determinants and impacts of economic development, corruption, political instability and aid have been investigated, little has been done to examine the causal relationships among them. This paper investigates the causal relationships among economic development, corruption, political instability and aid in the Economic Community of West African States (ECOWAS) from 1999 to 2012, using several techniques that include the granger causality test within a multivariate cointegration and error-correction framework, and forecast error variance decomposition and impulse response function analyses.*

*The results of the analyses indicate there is a short-run positive unidirectional causality from political instability to aid and a negative unidirectional causality from political instability to economic development; a long-run positive unidirectional causality from political instability to corruption and a negative unidirectional causality from political instability to economic development; a long-run positive unidirectional causality from aid to corruption and a negative unidirectional causality from aid to economic development; including a long-run positive bidirectional causality between economic development and corruption in ECOWAS countries. Thus, policies that promote political stability would foster economic development, lower corruption and reduce the reliance on aid; policies that lessen the reliance on aid would reduce corruption and promote economic development; and policies that reduce corruption would enhance economic development which in turn leads to lower corruption in the long-run in the region.*

**Keywords:** corruption, political instability, economic development, foreign aid, ECOWAS.

**JEL Classification**: E21

## 1. Introduction

Although most countries that are less developed, very corrupt and politically unstable rely on foreign assistance (or aid), the foreign aid system tends to have some impacts on the levels of economic development and corruption, including the political conditions in countries receiving aid. Moreover, it is usually not easy to separate the effects of economic problems, political instability, and civil wars from the effects of foreign aid (Brautigam & Knack 2004).

The savings gap model predicts that aid compliments domestic savings, increases the rate of capital formation and the fraction of income saved, and enhances a country's capacity to grow (Griffin 1970). This view was echoed earlier by Chenery and Strout (1966) that aid reduces the savings and trade gap and as a result promotes economic growth. Other ways by which aid can contribute to the receiving country's economy include strengthening of domestic institutions, payment of high salaries to civil servants, giving training and technical assistance to the judiciary and accounting offices, and the management of strategic government programs (Brautigam & Knack 2004).

But many have questioned the importance of aid or external finance in developing countries (see Bauer 1971; Griffin & Enos 1970; Gulati 1978; Stoneman 1975; Weisskopf 1972). Toeing the path of Bauer (1971), Wright and Winters (2010) argued that aid slows down political development by contributing to the development of bad institutions in the aid recipient-countries. Griffin and Enos (1970) suggested that donor-countries give aid to poor countries base on the political support/alignment of recipients to donors. Thus, in giving aid, donors consider their national interest rather than the needs, potentials, economic performance, or the virtue of poor countries. For instance,

it has been argued that the United States leading role in aid donation in East Asia is not unconnected with her fight against communism (Fritz & Menocal 2007). Another argument against foreign capital is that it hurts the host country's economy by suppressing domestic savings and encouraging consumption, rather than promoting investment in productive assets (Adelegan 2000; Griffin & Enos 1970; Stoneman 1975; Weisskopf 1972).

Additionally, aid can lead to the growth of public sector and increase spending on defence and police (Griffin, 1970; Gulati, 1978), and as a result lead to political instability. For instance, if the leadership uses the arms acquired and the police to suppress the press and those who seek for accountability and transparency in government, it will encourage political crisis. The inconsistencies of donors have also been blamed for fuelling political crisis in developing countries. Even though donors claim to promote democracy and good governance in aid-dependent countries, they have also been inconsistent in promoting ideal democratic practices. A case at hand is, while donors increased aid to Paul Biya for stealing presidential elections in Cameroon in 1992 including autocratic regimes headed by Gnassingbé Eyadéma in Togo and Mobutu in Zaire, Benin which was democratizing had its aid reduced (Englebert & Tull 2008). It is not surprising therefore, that these crop of leaders held on to power for years through unconstitutional means, and in the process bred political crises in their respective countries. Where people's votes do not count, leaders rarely see themselves as been accountable and responsible to the electorate. Also, aid can encourage coup and political instability, particularly if people place a high value on the control of the government and aid receipts (Grossman, 1992; Knack 2004).

The tendency of incumbents (Presidents or Head of States) to hold to power via unlawful means explains why many leaders in aid-dependent countries are very corrupt. Also, Fritz and Menocal (2007) opined that aid can promote rent-seeking or corruption among government officials if it is seen as a windfall. However, Tavares (2003) pointed out that aid can reduce corruption if it is associated with rules and conditions that limit the discretion of public officials of the recipient (conditionality effect). In addition, aid can reduce corruption if it cushions the shortfalls in government revenue and lead to increases in the salaries of government employees (liquidity effect).

Interestingly, aid allocation can be affected by the receiving country's levels of economic development (or income level), corruption and political conditions. For instance, Chauvet (2002) opined that political factors play important role in the allocation of aid by donors. Given that most donors-countries are democratic states, they encourage their former colonies and countries with weak political structures to embrace democracy by strengthening their political and democratic institutions. Therefore, countries that are democratizing are likely to be given more aid.

A country's level of economic development also influences aid allocation. All things being equal, most donors allocate more aid to poorer or least developed countries (Alesina & Dollar 2000), in order to raise their welfare. This view has been supported by Chauvet (2002) and Neumayer (2003b). Furthermore, aid allocation is also dependent on a country's level of corruption. Donors usually advice the leadership in poor countries to reduce public sector corruption, that has been found to be a major obstacle to economic development, to be eligible for assistance. Therefore, countries with improved and quality governance (or less corruption) are likely to receive more aid. On the other hand, donors may give more aid to countries where the level of corruption is high, to enable them invest in the fight against corruption (Alesina & Weder 2002). For example, donors can help establish anti-corruption agencies/bodies including training officials saddled with the responsibility of investigating, arresting and prosecuting offenders.

Besides, economic development, political factors and the level of corruption tend to re-enforce one another. For instance, Abu *et al.* (2015) argued that the levels of corruption and economic development, and political instability are interrelated in developing countries. Interestingly, researchers have established a connection between political factors and corruption (Claderon & Chong 2007; Mbaku & Paul 1989; Montinola & Jackman 2002), political instability and economic growth/development (Aisen & Veiga 2013; Alesina *et al.* 1996; Asteriou & Price 2001; Fosu 2002a, 2002b), as well as corruption and economic growth/development (Anoruo & Braha 2005; Bentzen 2012; Mauro 1995).

Available information indicates that most Economic Community of West African States (ECOWAS) countries are less developed, very corrupt and politically unstable (Abu *et al.* 2015). For instance, the Transparency International (TI) report for various years illustrate that the corruption

perception index (CPI) of ECOWAS countries (except Cape Verde) has consistently been less than 5 (out of a maximum of 10). Moreover, many ECOWAS countries ranked below 100 on the TI rankings for several years. These suggest that almost all the countries are very corrupt. Similarly, the Political Risk Service International Country Risk Guide (ICRG) report over the years show that the political risk rating (PRR) of most ECOWAS countries is less than 60%, indicating that the countries are facing serious political crisis. In the same manner, this group of countries has relied heavily on aid, as the share of aid (overseas development assistance) in government expenditure ranged from 27% in Togo to 54% in Senegal, 58% in Niger, up to 67% in Cape Verde and Guinea Bissau (Brautigam & Knack 2004).

Despite the abundant research on corruption, political instability, economic development and aid, researchers have not paid adequate attention to the issue of causality among the variables particularly in the ECOWAS region. Although the recent study by Abu *et al.* (2015) emphasized the importance of examining causality among corruption, political instability and economic development in the ECOWAS, the authors did not consider foreign aid in their analysis. This paper extends their work by assessing the casual relationships among corruption, political instability, economic development and aid in the region.

An examination of causal relationship is very important because it provides an insight on the variable policy makers need to control to achieve the desired levels of the target variable. For instance, if the causality test results demonstrate that it is aid that causes corruption/political instability, then policy makers can design policies to lessen the corruption/political instability effects of aid. In the same vein, if the results suggest that corruption/political instability precedes economic development, policy makers can employ policies to curb corruption or reduce political crisis in order to attain higher levels of economic development, and so on. To our knowledge, this is the first attempt to study the causal relationships among the four variables particularly in the ECOWAS. Following the introduction, section two is the literature review. The theoretical framework comes up in section three, while section four is for data analysis and discussion. Section five concludes the paper.

## 2. Literature review

Researchers have examined the connection between two or three of corruption, political instability, economic growth/development and aid. For instance, there are ample studies on the relationship between corruption and economic growth/development. For instance, Mauro (1995) employed ordinary least squares (OLS) and two stage least squares (TSLS) methods to examine the relationship between corruption and economic growth across countries. The authors' findings suggest that corruption lowers economic growth. Bentzen (2012) assessed the impact of corruption on economic development (gross domestic product per capita) in a sample of countries, using the instrumental variable (IV) estimation technique. The author discovered that corruption has a strong negative effect on economic development. Gyimah-Brempong (2002) used a dynamic panel estimator to examine the impact of corruption on economic growth and income distribution in African countries. The results demonstrate that corruption lowers economic growth directly and indirectly through lowering investment in physical capital. Anoruo and Braha (2005) employed the fully modified OLS (FMOLS) to examine the impact of corruption on economic growth in a group consisting of 18 African countries. The results show that corruption reduces economic growth directly by reducing productivity, and indirectly by hindering investment. Brautigam and Knack (2004) found that high GDP per capita is associated with improvement in quality of governance in Sub-Saharan Africa (SSA).

Also, scholars have investigated the association between political instability and economic growth/development. Asteriou and Price (2001) used GARCH-M models to test the effect of political instability on growth in the United Kingdom from 1961 to 1997. The results indicate that political instability has a significant negative impact on economic growth. Aisen and Veiga (2013) employed the system-GMM technique to examine the impact of political instability on economic growth in 169 countries from 1960 to 2004. The results demonstrate that higher political instability leads to declines in growth rates of GDP per capita. Alesina and Perotti (1996) investigated the relationship between income distribution, political instability and investment in 71 countries from 1960 to 1985. The authors' findings suggest that political instability decreases economic growth by lowering investment. Alesina *et al.* (1996) evaluated the relationship between political instability and GDP per capita

growth in 113 countries from 1950 to 1982, using a simultaneous equation approach. The results illustrate that higher degree of political instability (measured by a high propensity of government collapse) lowers economic growth. Gyimah-Brempong and Dapaah (1996) used a simultaneous equation model to examine the effects of non-elite political instability on economic growth in SSA. The results demonstrate that political instability has a significant negative influence on economic growth. Adelman and Morris (1968) estimated an econometric model of socio-economic and political change in underdeveloped countries. The authors confirmed that higher growth contributes the political stability via reducing political discontent and unrest in developing societies. They also discovered that higher political stability fosters economic performance. Other studies that found a significant impact of political instability on growth particularly in Africa include Fosu (2002a, 2002b) and Mbaku (1988).

Moreover, the empirical relationship between political factors and corruption has been investigated. For instance, Schumacher (2013) found that higher degree of democracy (measured by an improvement in electoral accountability) leads to a decline in bribery. Mbaku and Paul (1989) tested the rent-seeking theory of political instability for Africa, using a simple model. The results of their analysis support the claim that government-created rents act as an engine of political destabilization in Africa. Claderon and Chong (2007) analyzed the causality between rent-seeking behaviour and democracy in Uruguay, using the VAR approach and granger causality tests. The results suggest that higher democratic quality reduces rent-seeking. Montinola and Jackman (2002) confirmed that corruption is lower in dictatorships regime compare to partially democratized countries, and higher degree of democracy lowers corruption. Brautigam and Knack (2004) found that political violence is associated with poor governance in SSA.

Furthermore, scholars have examined the relationship between aid and corruption. Tavares (2003) employed OLS and IV techniques to assess the effect of aid on corruption in 11 OECD countries, including a sample of countries selected from SSA, East Asia and Latin America. The results demonstrate that aid lowers corruption. Brautigam and Knack (2004) examined if aid affect the quality of governance in SSA, using both OLS and TSLS methods. The results reveal that higher aid levels are associated with deterioration in governance. Svensson (2000) investigated if aid is associated with rent-seeking in a sample of countries, using the IV approach. The results indicate that aid is associated with higher levels of corruption in countries where there is a high likelihood of competing social groups. In addition, the author failed to find any evidence that donor-countries systematically allocate aid to countries with lower level of corruption. Neumayer (2003a) failed to find evidence that countries with less corruption are rewarded with higher aid. Knack (2001) analyzed the impact of aid dependency on quality of governance using cross-country data. The author found that higher aid leads to lesser quality of governance (captured by indices of bureaucratic quality, corruption, and the rule of law). Alesina and Weder (2002) examined if corrupt governments receive lesser aid across countries. The authors discovered that more corrupt governments receive higher aid. In addition, Scandinavian donors seem to give more aid to less corrupt countries, while the United States gives preference to democratic governments and pays little attention to the quality of governance in receiving countries.

Authors have also examined aid and political system relationship. For instance, Knack (2004) did a multivariate analysis of the effect of aid on democratization across countries from 1975 to 2000. The results illustrate that aid does not foster democratization. Neumayer (2003a) found that higher democracy (measured by political freedom) leads to higher aid receipts. Chauvet (2002) investigated the effects of socio-political instability (measured by elite instability, violent and social instability) on aid allocation by donors, using the TSLS approach with fixed effects. The results reveal that both violent and elite instability have a positive effect on aid allocation. Svensson (1999) evaluated the impact of aid on democracy and economic growth across countries using several estimation methods. The author did not find any evidence that aid is channeled to more democratic countries. Dollar and Levin (2006) found that aid has a positive relationship with democracy. Wall (1995) discovered an insignificant relationship between aid and political variables. Wright (2009) empirically tested if aid foster or hinder democratization in 101 countries from 1960 to 2002. The authors found that aid to a single-party regime increases the likelihood of democratization, while aid to military regimes reduces the probability of democratization. Frey and Schneider (1986) discovered that politically stable countries receive more aid from the 1970s through 1980s. Nielsen *et al.* (2011) examined the

connection between aid shocks (severe decreases in aid revenues) and violent armed conflicts, using a comprehensive dataset of bilateral and multilateral aid from1981 to 2005. The results indicate that negative aid shocks increase armed conflicts. Alesina and Dollar (2000) found that countries that democratize receive more aid. Gang and Lehman (1990) discovered that political instability has no effect on aid allocation.

Besides, researchers have evaluated the relationship between aid and economic growth/development. Dowling and Hiemenz (1985) employed cross-section and pooled regressions to investigate the pattern of both bilateral and multilateral aid allocations during the 1970s for a sample of 90 countries. Their findings suggest that low-income countries receive more aid per capita compared to middle-income countries. Gang and Lehman (1990) confirmed that GDP per capita has a negative impact on aid allocation in Latin American countries. Wall (1995) found a negative correlation between income per capita and aid. Alesina and Dollar (2000) studied the pattern of aid allocation by donors to aid recipients. They found that aid allocation is significantly affected by economic needs of the recipients. Burnside and Dollar (2000) investigated the relationships between aid, economic policies, and growth of GDP per capita. They discovered that aid has a positive impact on growth in developing countries with good policies (such as fiscal, monetary, and trade policies), while the influence is marginal in the presence of poor policies. Neumayer (2003b) confirmed that poorer countries (with low income level) receive more aid. Chauvet (2002) found that low-income countries receive more multilateral aid. Guillaumont and Chauvet (2001) discovered that countries that face a difficult environment or more vulnerable countries are likely to receive more aid. Gulati (1973) failed to find a significant correlation between aid and growth, while Gulati (1978) found a positive correlation between aid and income growth in less developed countries. Griffin and Enos (1970) observed an inverse relationship between the average rate of growth of GNP and aid-GNP ratio in Latin American countries.

Looking at the literature, it is evident that researchers have not paid attention to the issue of causality among corruption, political instability, economic development and aid particularly in the ECOWAS. Thus, this study extends the literature by examining the causal relationships among the variables in the region.

## 3. Theoretical framework

In building our model, we borrow the ideas of Shleifer and Vishny (1993), Mauro (1995, 2004) and Park (2003). For instance, Mauro (1995) presented a scenario where an individual politician sets a high bribe rate. The resultant widespread corruption leads to poor economic performance and collapse of the government through revolutions and coups (Mauro 2004). On his part, Le Billon (2003) suggested that increasing violent kinds of competitive corruption among different groups that engage in corruption can lead to armed conflicts. Assuming that government officials saddled with the responsibility of disbursing funds meant for the provision of basic amenities divert such funds for personal use, it will further raise the inequality and poverty level of the people. As corruption persists, it leads to discontent, prompting protests and strikes, and eventually the collapse of (change in) government. Whereas change in government is done through electioneering process (Gyimah-Brempong & Dapaah 1996) and in line with constitutional provisions in developed countries, it often takes unconstitutional means (such as military takeovers) in ECOWAS countries (Abu *et al.* 2013). In fact, successive military regimes in the ECOWAS alluded to corruption as one of the reasons for seizing power (Edi 2006).

On the other hand, Shleifer and Vishny (1993) suggested that if public office holders are uncertain they will complete their term in office (as a results of instability in the polity), they would resort to irresponsible act such as rent-seeking. In the same vein, Park (2003) argued that higher uncertainty resulting from political instability would induce government officials to acquire wealth via corrupt practices so as to maintain their social status even after they are out of job. In explaining the role of corruption in fuelling war, Le Billon (2003) mentioned that if elections are rigged, both the ruling class and opposition may resort to violence to emphasize or defend their position.

Moreover, Mauro (1995) pointed out that low-income (poor) countries tend to be more corrupt and politically unstable. This suggests that low-incomes can force individuals to indulge in corrupt activities to raise their socio-economic welfare, in addition to promoting political instability (Abu *et al.* 2015). Fortunately, it has been argued that high incomes tend to reduce corruption (Montinola &

Jackman 2002; Schumacher 2013; Van Rijckeghem & Weder 2001), as well as promoting political stability (Adelman & Morris 1968; Helliwell 1994). Furthermore, corruption and political instability undermine an economy's development through among other things, their effects on savings, investment and production (Abu *et al.* 2015).

As stated earlier, aid seems to be theoretically linked to the levels of corruption, political instability, and economic development. For instance, aid or external finance can hurt an economy by reducing domestic savings and encouraging consumption, rather than promoting investment in the recipient country (Adelegan 2000; Griffin & Enos 1970). While some studies demonstrate that foreign capital impedes economic growth (Weisskopf 1972; Stoneman 1975), others indicate aid leads to higher growth (Burnside & Dollar, 2000).

Also, aid can promote democracy through technical assistance in electoral processes, strengthening of legislatures and judiciaries, encouraging civil society organizations and a free press, promoting education and raising incomes levels (Knack, 2004). On the other hand, aid can fuel political crisis in the recipient country by promoting the growth of public sector, including increasing defence and police expenditures (Griffin, 1970; Gulati, 1978). Consequently, the leadership can use the ammunitions and state police to suppress the press and those who seek for accountability and transparency in government. In the same vein, aid can promote coup and political instability, if people place a high value on the control of the government and aid receipts (Grossman, 1992; Knack, 2004).

More so, aid can reduce corruption through conditionality and liquidity effects (Tavares, 2003). The conditionality effect entails that aid is associated with rules and conditions which limit the discretion of government officials in the receiving country, while the liquidity effect implies that aid reduces corruption through cushioning the shortfalls in government revenue as well as increasing the salaries of government employees. But Fritz and Menocal (2007) argued that aid can encourage corruption among government officials if it is seen as a windfall.

By the same token, aid allocation can be affected by the levels of economic development and corruption, and political conditions in the receiving country. For instance, political factors have been found to have a significant impact on aid allocation by donors (Chauvet 2002). Also, studies have shown that more corrupt governments receive more aid (Alesina & Weder 2002), while less corrupt countries receive lower aid (Neumayer 2003a). Furthermore, aid-recipient's level of economic development has some influence on aid allocation (Chauvet 2002, Neumayer 2003b). Thus, it seems that corruption, political instability, economic development and aid cause one another.

## 4. Data analysis and discussion

The data used in this study were collected from three main sources as follows. The Corruption index (CPI) was obtained from the TI, political instability index (PRR) from the ICRG, and foreign aid and economic development from the World Development Indicators. The variables are defined and/or measured as follows. Political instability has been measured by the number of successful coups, number of people killed in domestic mass violence as a fraction of total population, number of attempted but unsuccessful coups, or the number of politically motivated assassinations (Alesina & Perotti 1996). But such (rich) data is not readily available for ECOWAS countries for a considerable number of years. Therefore, political instability is proxied by the PRR. The PRR ranges from 0% (very high political risk) to 100% (very low political risk), and its components include military in politics, political terrorism, political leadership, civil war, organized religion in politics, racial and national tension, law and order, political party development and external conflicts. The PRR has been employed in recent empirical studies (see Abu *et al.* 2013, 2015; Hayakawa *et al.* 2013), and has been found to be highly correlated with macroeconomic variables.

Also, it is usually not easy to measure corruption, and people's perception about corruption varies from one society to another. Moreover, since most corrupt activities are done in secrecy because they are considered unlawful, it is difficult to measure them. Furthermore, the objective measure of corruption (such as the number of individuals convicted for engaging in corrupt act) has been criticised on several grounds. For instance, Lambsdorff (1999, 2006) mentioned that the high level of conviction in Singapore and Hong Kong does not imply that corruption is high in those countries, but instead suggest that the judiciary and anti-corruption bodies are very efficient in detecting and prosecuting corrupt individuals. Given the shortcomings of the objective measure, corruption perception indices (subjective data) are frequently used. Similarly, Gyimah-Brempong (2002)

contended that, due to inadequate measurements of corruption, one can use the corruption perception indices. To this end, we employed the CPI. The index ranges from 0 (very corrupt) to 10 (very clean), and has been used in recent studies (Abu *et al.* 2015; Blackburn *et al.* 2010; Gyimah-Brempong 2002; Swaleheen 2007). The reliability of the CPI cannot be questioned as it has been found to be highly correlated with economic variables (Blackburn *et al.* 2010).

Economic development is proxied by GDP per capita which has been employed in recent studies (see Abu *et al.* 2015; Bentzen 2012). Aid is measured as the share of net official development assistance received in GNI. It is important to mention that 13 ECOWAS countries were considered is this study due to unavailability of data on PRR for two countries (Benin and Cape Verde). The study covers the period 1999-2012. Also, due to missing data on certain variables such as the CPI for some years in some countries, we are left with an unbalanced data.

### *4.1 Unit root tests*

Prior to estimating our relationships, we performed unit root tests to ascertain the stationarity properties of the variables. The tests are important because they guard against the generation of meaningless results. Granger and Newbold (1974) and Phillips (1986) suggested that regression results generated using non-stationary series would be spurious. The Fisher-Augmented Dickey Fuller (Fisher-ADF) and Fisher-Phillips Perron (Fisher-PP) statistics were employed to conduct the unit root test. The unit root test results reported in Table 1 indicate that the series have a unit root at level, while they turned out stationary after first differencing. This lends support to the view that many macroeconomic variables are non-stationary at their level, but become stationary after their first differencing (Nelson & Plosser 1982).

**Table 1 -** Results of panel unit root tests (with intercept)

| Variables | Fisher-ADF | | Fisher-PP | |
|---|---|---|---|---|
| | Level | 1st diff. | Level | 1st diff. |
| LnCOR | -0.0718<br>(0.4714) | -3.0180***<br>(0.0013) | 1.9802<br>(0.9762) | -3.6313***<br>(0.0000) |
| LnPOL | 0.5436<br>(0.7067) | -4.3285***<br>(0.0000) | -0.2329<br>(0.4079) | -7.4548***<br>(0.0000) |
| LnGDP | 1.6408<br>(0.9496) | -3.9291***<br>(0.0000) | 4.6867<br>(0.9999) | -7.6076***<br>(0.0000) |
| LnAID | -1.0941<br>(0.1369) | -5.5767***<br>(0.0000) | -1.5471<br>(0.0609) | -9.7276***<br>(0.0000) |

**Note:** Numbers in parenthesis are probability values. *** indicates a rejection of the null hypothesis of unit root at 1% significance level.

### *4.2 Cointegration tests*

Given that the series are stationary at first difference, we proceeded to examine if they are cointegrated or have a long-run relationship. If the results reveal that the series are cointegrated, it implies that the estimated relationships would be free from spuriousness. Furthermore, the presence of cointegration suggests that causality would exist in at least one direction (Granger 1986). To achieve this objective, we employed the Pedroni residual cointegration test (Pedroni 1997, 1999). The results reported in Table 2 demonstrate that the variables have a cointegrating relationship.

**Table 2 -** Results of Pedroni residual cointegration tests

| Statistics (Within-dimension) | Value |
|---|---|
| Panel v-statistic | -0.3934 |
| Panel rho-statistic | 1.1289 |
| Panel PP-statistic | -2.9360*** |
| Panel ADF-statistic | -2.2981** |
| **Statistics (Between-dimension)** | **Value** |
| Group rho-statistic | 2.7512 |
| Group PP-statistic | -8.8574*** |
| Group ADF-statistic | -4.8261*** |

**Note:** ** and *** indicate a rejection of the null hypothesis of no cointegration at 5% and 1% significance level, respectively.

### *4.3 Granger causality tests*

Having established that the variables are cointegrated, we moved on to examine the direction of causality among them. According to Granger (1969), variable 'X' is said to granger cause another variable 'Y', if Y is better predicted by the lagged values of X than by not doing so with the lagged values of Y in the reverse case. Our task here is to investigate if the current values of each dependent variable can be predicted by lagged values of the explanatory variables. To this end, the multivariate vector error-correction model (VECM) was employed to conduct the Granger causality tests. In the VECM, each of corruption (COR), political instability (POL), economic development (GDP) and foreign aid (AID) is specified as a function of the other variables as follows.

$$\Delta LnCOR_{it} = \alpha_0 + \sum_{j=1}^{J} \alpha_1 \Delta LnPOL_{it-j} + \sum_{i=1}^{J} \alpha_2 \Delta LnGDP_{it-j} + \sum_{i=1}^{J} \alpha_3 \Delta LnAID_{it-j} + \sum_{i=1}^{J} \alpha_4 \Delta LnCOR_{it-j} + \phi_1 ECT_{t-1} + U_{1it} \quad (4.1)$$

$$\Delta LnPOL_{it} = \beta_0 + \sum_{i=1}^{J} \beta_1 \Delta LnCOR_{it-j} + \sum_{i=1}^{J} \beta_2 \Delta LnGDP_{it-j} + \sum_{i=1}^{J} \beta_3 \Delta LnAID_{it-j} + \sum_{i=1}^{J} \beta_4 \Delta LnPOL_{it-j} + \phi_2 ECT_{t-1} + U_{2it} \quad (4.2)$$

$$\Delta LnGDP_{it} = \delta_0 + \sum_{i=1}^{J} \delta_1 \Delta LnCOR_{it-j} + \sum_{i=1}^{J} \delta_2 \Delta LnPOL_{it-j} + \sum_{i=1}^{J} \delta_3 \Delta LnAID_{it-j} + \sum_{i=1}^{J} \delta_4 \Delta LnGDP_{it-j} + \phi_3 ECT_{t-1} + U_{3it} \quad (4.3)$$

$$\Delta LnAID_{it} = \lambda_0 + \sum_{i=1}^{J} \lambda_1 \Delta LnCOR_{it-j} + \sum_{i=1}^{J} \lambda_2 \Delta LnPOL_{it-j} + \sum_{i=1}^{J} \lambda_3 \Delta LnGDP_{it-j} + \sum_{i=1}^{J} \lambda_4 \Delta LnAID_{it-j} + \phi_4 ECT_{t-1} + U_{4it} \quad (4.4)$$

*where:* Ln is the log of the variables; Δ is the first difference operator; U the residuals; $ECT_{t-1}$ is the one period lagged of the error-correction term; and the t-statistic of the $ECT_{t-1}$ is used to determine the long-run causality.

The statistical significance of each explanatory variable's coefficients is measured using the Wald test. The coefficients are restricted to a common value. Thus, if the common value of the coefficients of a particular explanatory variable (in the equation of interest) is found to be statistically significant, then it can be concluded that the variable causes the dependent variable and vice versa.

Prior to conducting the causality test, we used the lag order selection criteria to choose the appropriate lag length. The various criteria including Akaike information criterion (-4.0889), Schwarz criterion (-3.4801) and Hannan-Quinn information criterion (-3.8454) indicate that the optimum lag length is 1. The results of Granger causality tests reported in Table 3 illustrate that there is a short-run unidirectional causality from political instability to economic development and aid; there is a long-run unidirectional causality from political instability, economic development and aid to corruption; and there is a long-run unidirectional causality from corruption, political instability and aid to economic development in the ECOWAS.

**Table 3 -** Results of Granger causality tests

| | Independent variables | | | | |
|---|---|---|---|---|---|
| **Dependent variab.** | **$\Delta LnCOR_{it}$** | **$\Delta LnPOL_{it}$** | **$\Delta LnGDP_{it}$** | **$\Delta LnAID_{it}$** | **$ECT_{t-1}$** |
| $\Delta LnCOR_{it}$ | - | 3.2274 | 1.5470 | 2.5634 | -0.1296*** [-3.2254] |
| $\Delta LnPOL_{it}$ | 1.5056 | - | 0.8174 | 1.8984 | -0.0160 [-0.8723] |
| $\Delta LnGDP_{it}$ | 2.7389 | 8.3783** | - | 1.8458 | -0.1438*** [-3.2574] |
| $\Delta LnAID_{it}$ | 0.6656 | 8.3106** | 0.9103 | - | -0.3261 [-1.7534] |

*Note*: ** and *** indicate a rejection of the null hypothesis of no causality at 5% and 1% significance level, respectively; and t-statistics are in parenthesis.

### *4.4 Forecast error variance decomposition and impulse response analyses*

The Granger causality analysis conducted above is limited to 1999-2012, but it does not consider the dynamic interaction of the variables beyond the sample period. Also, causality tests reveal the direction of causality among the variables only, and do not indicate if the sign of the relationship is positive or negative. Moreover, the tests are not able to illustrate how long the impacts require to take place in a system. In order to understand the dynamic relationships among corruption, political instability, economic development and aid beyond the sample period (that is, 1999-2012), we conducted the forecast error variance decomposition and impulse response function analyses (Sims 1980). The forecast error variance decomposition (FEVD) is useful in ascertaining the relative strength of random shock in the system. Sims (1980) argued that if a variable is actually exogenous, its variance can only be explained by its own shock only. The FEVD tells us the amount of variations in a variable that is caused by its own shock including shocks to other variables in the system. In the short-term, a higher percentage of the variation in a variable is caused to its own shock, but in the long-term the impact of shocks to other variables increases. In computing the variance decomposition, each variable in the system is disturbed with a one standard deviation. On the other hand, the impulse response function analysis (IRF) is used to trace out each variable's response to a shock to the other variables in the system.

The results of the FEVD of corruption, political instability, economic development and aid to a one standard deviation shock in corruption, political instability, economic development and aid over the 10 years period are reported in Table 4. The results of the FEVD illustrate that economic development is the most exogenous variable, followed by corruption, political instability and aid. For instance, 96.0%, 95.7%, 92.5% and 63.8% of the variations in the error variance for economic development, corruption, political instability and aid, is explained by its own shock, respectively, in the second year. In explaining the shocks to corruption, economic development is more important than aid and political instability in the short-run, while aid and political instability are more important than economic development in the long-run. For instance, economic development, political instability and aid account for 3.02%, 1.02% and 0.30% variations in corruption, respectively, in the second year. But aid, political instability and economic development explain 9.71%, 8.39% and 3.50% variations in corruption, respectively in the tenth year.

Moreover, corruption is more important followed by aid and economic development in explaining the shocks to political instability in the short-run and long-run. For instance, corruption, aid and economic development explain 6.48%, 0.97% and 0.10% variations in political instability, respectively, in the second year. In the same manner, corruption, aid and economic development account for 12.2%, 2.31% and 0.46% variations in political instability, respectively, in the tenth year.

Furthermore, aid is more important than political instability and corruption in explaining the shocks to economic development in the short-run and long-run. Whereas, aid accounts for 2.11% variations in economic development in the second year, corruption and political instability explain 1.10% and 0.80% variations in economic development in the same period. Similarly, aid's contribution to the variations in economic development is 21.9% in the tenth year, while corruption and political instability account for 4.11% and 1.52% variations in economic development, respectively, during the same period.

In explaining shocks to aid, political instability is more important followed by economic development and corruption in the short-run and long-run. For instance, political instability accounts for 21.4% and 18.4% variations in aid in the second and tenth year, while economic development and corruption explain 8.86% and 15.7%, and 6.00% and 14.3%, respectively, during the same period.

**Table 4-** Results of forecast error variance decomposition analysis

| **Variance decomposition of LnCOR:** | | | | |
|---|---|---|---|---|
| Yr | LnCOR | LnPOL | LnGDP | LnAID |
| 1 | 100 | 0.00 | 0.00 | 0.00 |
| 2 | 95.7 | 1.02 | 3.02 | 0.30 |
| 10 | 78.4 | 8.39 | 3.50 | 9.71 |

**Variance decomposition of LnPOL:**

| Yr | LnCOR | LnPOL | LnGDP | LnAID |
|---|---|---|---|---|
| 1 | 7.86 | 92.1 | 0.00 | 0.00 |
| 2 | 6.48 | 92.5 | 0.10 | 0.97 |
| 10 | 12.2 | 85.1 | 0.46 | 2.31 |

Variance decomposition of LnGDP:

| Yr | LnCOR | LnPOL | LnGDP | LnAID |
|---|---|---|---|---|
| 1 | 1.43 | 0.04 | 98.5 | 0.00 |
| 2 | 1.10 | 0.80 | 96.0 | 2.11 |
| 10 | 4.11 | 1.52 | 72.4 | 21.9 |

Variance decomposition of LnAID:

| Yr | LnCOR | LnPOL | LnGDP | LnAID |
|---|---|---|---|---|
| 1 | 4.32 | 8.75 | 10.6 | 76.3 |
| 2 | 6.00 | 21.4 | 8.86 | 63.8 |
| 10 | 14.3 | 18.4 | 15.7 | 51.7 |

Cholesky Ordering: LnCOR LnPOL LnGDP LnAID

The results of the IRF presented in Table 5 demonstrate that over the ten years period, a one standard deviation shock to political instability, economic development and aid has a positive impact on corruption. Furthermore, a shock to corruption has a positive impact on political instability over the ten years period, while a shock to aid has a negative impact political instability over the same period.

Additionally, a shock to corruption has a positive impact on economic development, while a shock to aid has a negative effect on economic development over the ten years period. Whereas, a shock to political instability has a positive impact on economic development in the second year, its impact is negative in the tenth year. Moreover, a shock to corruption and political instability has a positive impact on aid, but a shock to economic development has a negative impact on aid over the ten years period.

**Table 5-** Results of impulse response function analysis

Response of LnCOR:

| Yr | LnCOR | LnPOL | LnGDP | LnAID |
|---|---|---|---|---|
| 1 | 0.12 | 0.00 | 0.00 | 0.01 |
| 2 | 0.10 | 0.02 | 0.03 | 0.02 |
| 10 | 0.09 | 0.04 | 0.02 | 0.04 |

Response of LnPOL:

| Yr | LnCOR | LnPOL | LnGDP | LnAID |
|---|---|---|---|---|
| 1 | 0.01 | 0.05 | 0.00 | -0.01 |
| 2 | 0.01 | 0.05 | 0.00 | -0.00 |
| 10 | 0.02 | 0.04 | 0.00 | -0.01 |

Response of LnGDP:

| Yr | LnCOR | LnPOL | LnGDP | LnAID |
|---|---|---|---|---|
| 1 | 0.02 | -0.00 | 0.13 | -0.03 |
| 2 | 0.01 | 0.02 | 0.12 | -0.03 |
| 10 | 0.03 | -0.01 | 0.12 | -0.09 |

Response of LnAID:

| Yr | LnCOR | LnPOL | LnGDP | LnAID |
|---|---|---|---|---|
| 1 | 0.11 | 0.16 | -0.17 | 0.47 |
| 2 | 0.13 | 0.28 | -0.12 | 0.31 |
| 10 | 0.15 | 0.12 | -0.15 | 0.23 |

Cholesky Ordering: LnCOR LnPOL LnGDP LnAID

The findings of this study indicate that there is a short-run unidirectional causality from political instability to economic development and aid, while there is a long-run unidirectional causality from economic development, political instability and aid to corruption, and also from corruption, political instability and aid to economic development in the ECOWAS. Furthermore, economic development, political instability and aid all have a positive impact on corruption both in the short-run and long-run. Besides, corruption has a positive impact on political instability, while aid has a negative

impact on political instability both in the short-run and long-run. Also, corruption has a positive impact on economic development both in the short-run and long-run, while political instability and aid have a negative impact on economic development in the long-run. Moreover, political instability and corruption have a positive impact on aid, while economic development has a negative impact on aid both in the short-run and long-run.

Based on these analyses, there is a short-run positive unidirectional causality from political instability to aid and a negative unidirectional causality from political instability to economic development; a long-run positive unidirectional causality from political instability to corruption and a negative unidirectional causality from political instability to economic development; a long-run positive unidirectional causality from aid to corruption and a negative unidirectional causality from aid to economic development; as well as a long-run positive bidirectional causality between economic development and corruption in ECOWAS countries.

## Conclusion

There is no doubt that most ECOWAS countries are less developed, very corrupt, and politically unstable, in addition to relying heavily on foreign aid. Although, many studies have been conducted to examine the impacts and determinants of corruption, political instability, economic development and aid, little attention has been paid to the issue of causality among them particularly in the ECOWAS region. This study investigates the causal relationships among the variables in the ECOWAS using several techniques that include Granger causality test within a multivariate cointegration and error-correction framework, and forecast error variance decomposition and impulse response function analyses.

The findings suggest that the unstable political environment is the cause of low level of economic development, high corruption and reliance on aid in the ECOWAS region. Also, foreign aid seems to encourage corruption and contribute to the region's underdevelopment, while corruption and underdevelopment reinforce each other. Thus, policies that promote political stability would foster economic development, lower corruption and reduce the reliance on aid; policies that lessen the reliance on aid would reduce corruption and promote economic development; and policies that reduce corruption would enhance economic development which in turn leads to lower corruption in the ECOWAS.

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